



5G Volumetric Streaming



How does volumetric video work?

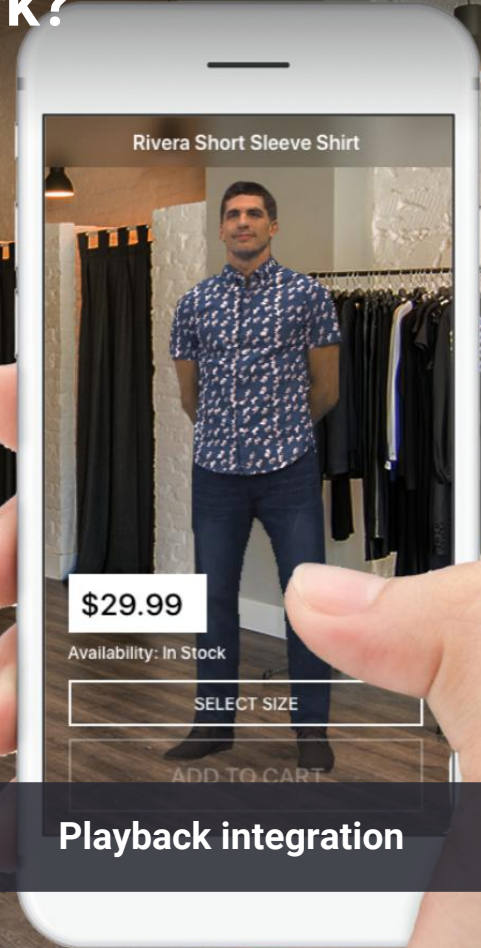


Video capture

```
PlaybackAsset1  
Actor1  
Codec: H.265  
Verts: 817216  
482 (0 - 518)  
30.0 FPS
```

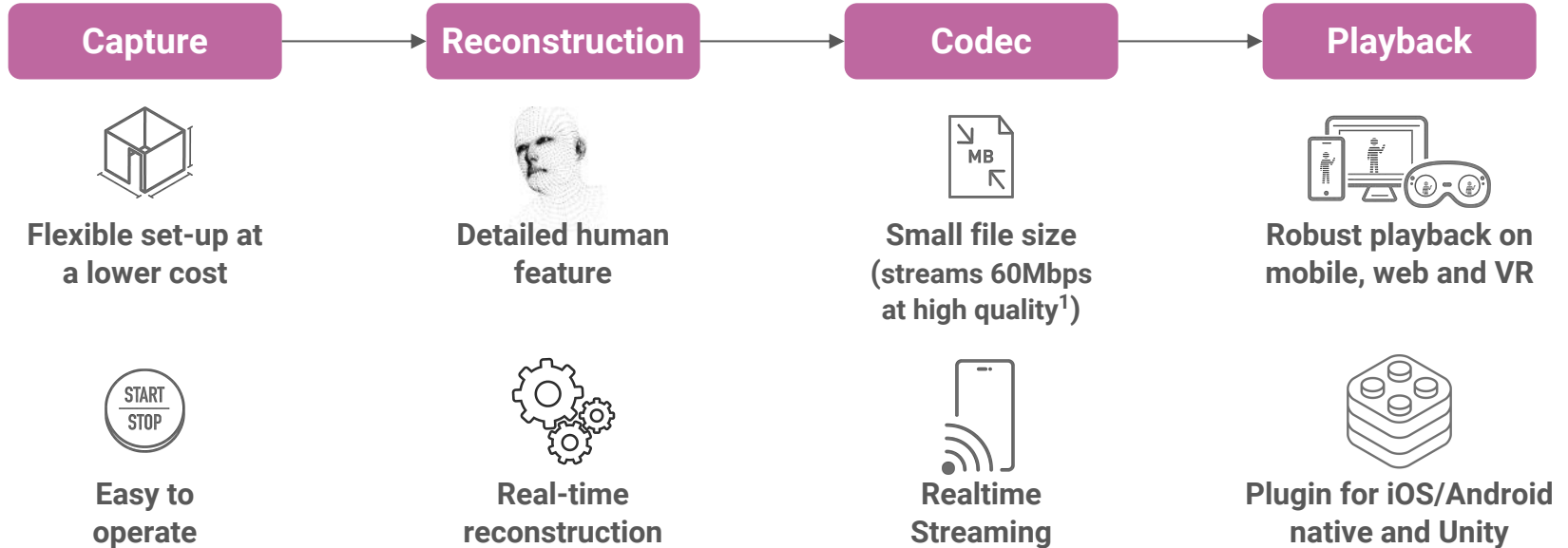


Reconstruction and
Compression



Playback integration

Our solution is ready for scale.



11 patents issued or pending and substantial proprietary IP



Capture Stage

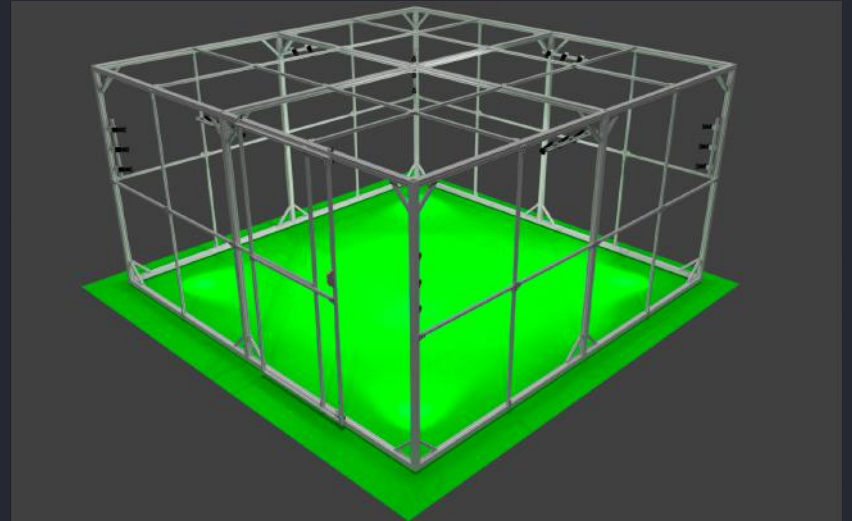
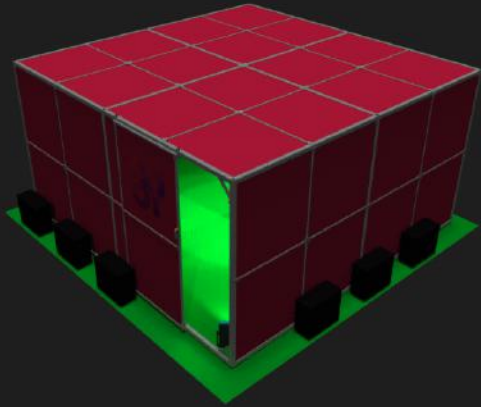
Volumetric Studio Stage



- 30 x 4k Cameras
- RGB Cameras (No IR camera)
- Capture Volume (diameter x height):
8.2' x 7.2' (2.5m x 2.2m)
- Stage Footprint (width x depth x height):
32' 10" x 32' 10" x 20' (10m x 10m x 6.1m)

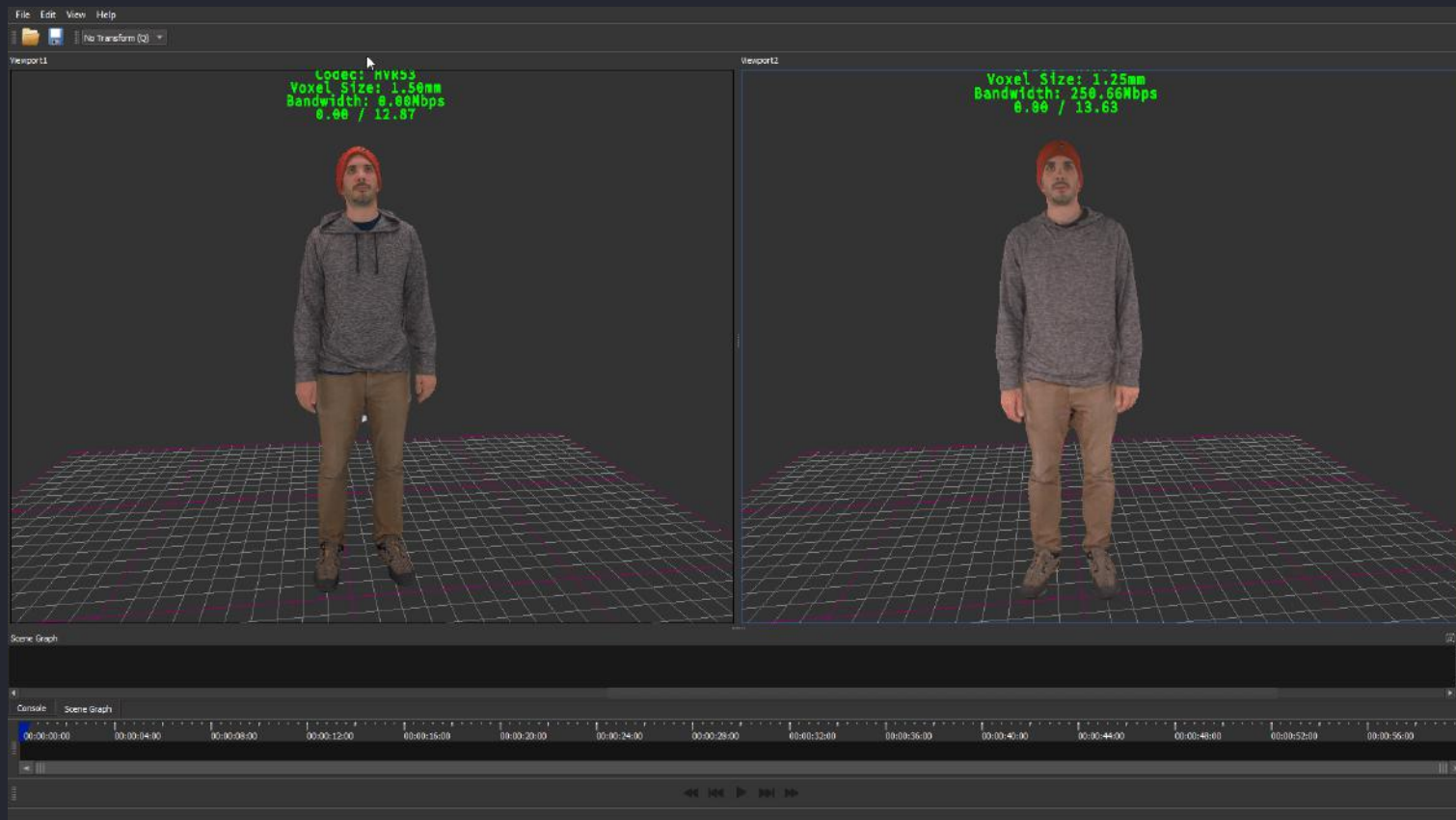


Portable Volumetric Stage



- 30 x 2K HD Cameras
- Capture Volume (diameter x height): 4.9' x 6.6' (1.5m x 2m)
- Stage Footprint (width x depth x height): 16' x 16' x 8' (4.9m x 4.9m x 2.4m)
- The stage can be fully assembled and disassembled in 3 working days (1 Day if needed)
- Support for creating one-to-many-streaming, live broadcast of a performer to multiple clients.

Volumetric Studio vs Portable Studio





Reconstruction & Codec

Development roadmap



Video capture



Processing



Playback integration

2018

High end capture stage

Wired

Local render farm
Recon and compression

4G

Med quality holograms
HMD, mobile, web

2020

Portable small capture stage

5G

Edge computing
Recon and compression

5G

High quality holograms
AR + VR glasses



New hardware offerings

New service offerings

Increased service demand



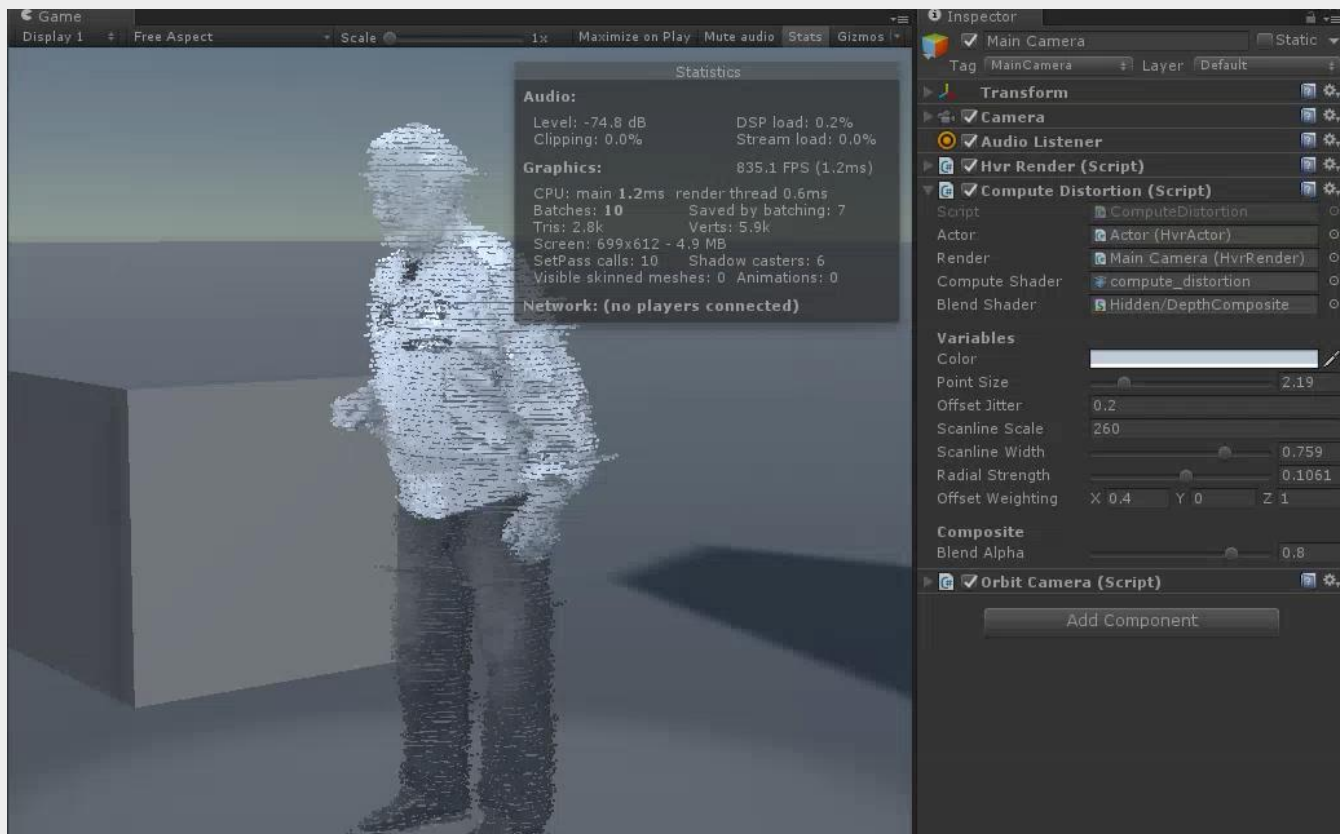
Bitrate, Quality and Features

Web Quality: 300K points (2.5 mm voxel size)
High Quality: 1.5M points (1.5 mm voxel size)

8i Client Available Codecs

Codec	Availability	Bitrate	Offline	Real-time	Mobile	Web	7 Second File Size
HVR53	Now	20 Mbps - Web Quality - 15fps 194 Mbps - High Quality - 30fps	Yes	No	Yes	Yes	18 MB 170 MB
HVR55	Q2' 2019	17 Mbps - Web Quality - 15fps 172 Mbps - High Quality - 30fps	Yes	Yes	Yes	Yes	16 MB 151 MB
HVR70	~ Q3' 2019	~ 13 Mbps - Web Quality - 15 fps ~ 65 Mbps - High Quality - 30 fps	Yes	Yes	Yes	Yes	~ 12 MB ~ 57 MB

Voxel-Based Approach - Point Cloud



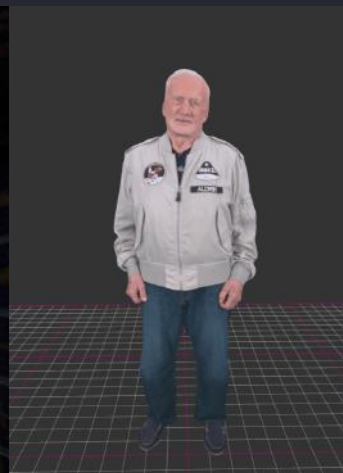
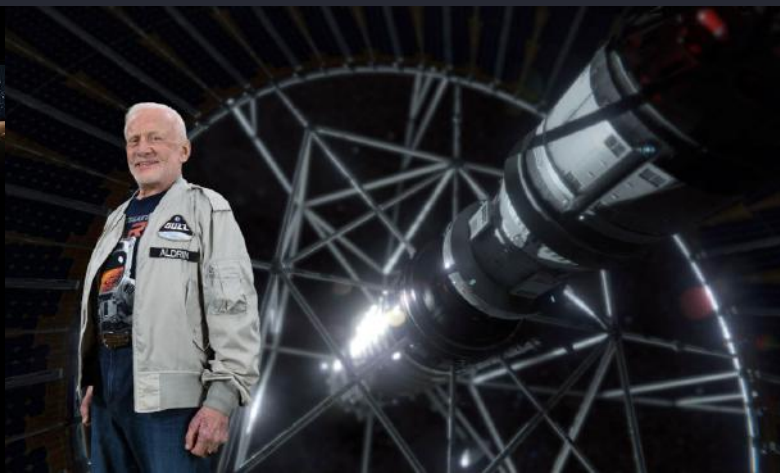


Volumetric Applications

Since 2016, we have produced many innovative mobile and VR experiences with major media and tech brands



Buzz Aldrin Cycling Pathways to Mars with Time Inc's LIFE VR



2018 Webby and People's Voice winner

2016 - 2017 Primetime Emmy Award Finalist



Buzz Aldrin wants to be remembered for more than just “kicking up moon dust.” He wants his legacy to include laying the groundwork for a permanent human settlement on Mars, and he has a plan. As NASA prepares to send the first humans to Mars, 8i and Time Inc's LIFE VR have collaborated with the celebrated astronaut and historical icon to create a one of a kind virtual reality experience.

https://store.steampowered.com/app/608000/Buzz_Aldrin_Cycling_Pathways_to_Mars/



Walmart x Bonobos Store No 8 Innov8 VR Experience



Walmart's innovation group Store No 8 invited 8i to enter a competition to be part of their Innov8 event (storeno8.com/innov8). We were picked from 200 entries and in addition reward to build the experience Store No 8 partnered us with Walmart owned brand Bonobos to create a VR proof-of-concept for the Bonobos retail experience where the customer is able to interact and shop with the Bonobos Guide. <https://www.youtube.com/watch?v=6XNuEdlrBl5>



Pike Electric Immersive training VR Experience



8i has partnered with Pike Electric to produce over 10 interactive training experiences

Experience Video: https://drive.google.com/file/d/1czXlh7A62RBNtm-oOHc7sNPw3k_gnW7K/view?usp=sharing





5G volumetric streaming AR

LG Uplus AR



LG Uplus AR 5G streaming volumetric AR



LG Uplus is aggressively driving to build new AR contents and services to utilize 5G technologies.

- First demonstrate at MWC 2019
- Released Date: 1 April/2019
- Introduce 5G volumetric streaming
- K-pop music, variety performance and sports area.





Live Streaming

Live Streaming Breakthrough



Broadcast

One way real-time communication and streaming over mobile networks



Live Streaming Breakthrough



RT Stage
(with HVR55
support to capture 70FPS)

200 – 300ms
Delay

**RT Compress
Format**

Stream to AWS

**AWS transcoder
for HVR**

Use any of our playback
compression formats.

Make many quality levels
(Live broadcast: HVR55)

**Stream to multiple
web player users**



**Make MPEG Dash
(like) manifest**
(Video On Demand style
content in 5 seconds chunks)





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